



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Gascoigne, et al.

Serial No.: 09/519,824

Filed: March 6, 2000

For: Method of Making Pasta Filata Cheese

Examiner: Carolyn Paden

Docket: 116210-77865

Group Art Unit
1761

8/1/01 KB
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AMENDMENT

Honorable Commissioner of Patents and Trademarks
United States Patent and Trademark Office
Washington, D.C. 20231

Sir:

This is responsive to the Office Action issued May 21, 2001, having a shortened statutory period for response ending August 21, 2001. Reexamination and allowance of this application is respectfully solicited in light of the following amendments and remarks.

Authorization is given to charge our Deposit Account #50-0937 for any fees necessary for the entry and consideration of this Amendment.

ATTACHED REGULATIONS

Attached to this Amendment, are copies of various pertinent federal regulations of the Food and Drug Administration, from 21 C.F.R. Part 133. The pertinence of these regulations is discussed further within the REMARKS section of the Amendment, particularly with regard to the Callahan patent (5,104,675).

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IN THE SPECIFICATION:

Please ~~replace~~ the paragraph beginning on page 1, line 12, with the following rewritten paragraph:

✓
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Natural cheese is conventionally prepared from a milk product, such as whole milk 10, skim milk 12, nonfat dry milk, cream 14 or combinations thereof as illustrated in the Figure 1 Natural Cheese Flow. The milk product is pasteurized 16, acidified, usually with lactic acid, and a bacterial culture 18 is added to the cheese vats 20. Adding a milk-coagulating enzyme coagulates the acidified milk. The coagulum, referred to as curd, is blended to a particulate and heated to separate whey from the curd. After separation of whey, as in matting machines 22, the curd is salted 24, conducted to the cheese towers 26 and formed into solid blocks of cheese 28. The cheese cures in temperature-controlled conditions 30 to achieve the desired texture and flavor.

[Please ~~replace~~ the paragraph beginning on page 3, line 3, with the following rewritten paragraph:

✓
R
The inventive method differs from traditional methods of making pasta filata in that much of the standardization of the fat-level takes place in the curd blenders. The inventive method uses either fresh or aged curd. The inventive method may add emulsifiers and other traditional cheese-making ingredients, if desired. An advantage of the inventive method that either minimal or no emulsifier need be added to the processed cheese cooker and that no other ingredients need be added to the processed cheese cooker. The inventive method uses direct steam for cooking and stretching, instead of hot water. It is an advantage of the present process to use a typical processed blender and a typical processed cheese cooker to prepare the pasta filata cheese. However, the method of this invention may use any other method of blending the curd and melting the curd using direct steam. The present invention blends and melts the curd just until forming an evenly melted product with none of the typical pasta filata individual strands. The present method molds the cheese by pumping or extruding the melted curd from the processed cheese cooker and filling various size packages. The filled packages cool in a

R2
blast cooler with sufficient air circulation. Salt can be added to the cheese either in the blender or in the processed cheese cooker, instead of using the traditional brine cooling and salting method. The inventive process may also use traditional molding and brining of the cheese, if desired, but eliminating brine cooling achieves distinct cost savings, as will be more fully explained further herein.

[Please ~~replace~~ the paragraph beginning on page 4, line 16, with the following rewritten paragraph:

R3
A method of making a pasta filata cheese comprises blending a typical pasta filata-type cheese curd, injecting steam into the blended curd just until the blended curd forms a uniformly melted product, and packaging and cooling the melted product. Lowering the fat content of milk used in making the curd may reduce the fat content of the pasta filata cheese. The salt level of the pasta filata cheese may be determined by adjusting the salt content of the curd before injecting steam into the blended curd. To optimize quality of the pasta filata cheese, various ingredients may be added before injecting steam into the blended curd. These ingredients may be non-fat dry milk, anhydrous milk fat, milk protein concentrate, concentrated milk fat, dry cream, emulsifier, water, salt, or other ingredients allowed by current or future standards, and mixtures thereof.

[Please ~~replace~~ the paragraph beginning on page 5, line 6, with the following rewritten paragraph:

R4
A novel method of making a cheese comprises blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4, processing the blended curd in a processed cheese cooker just until the blended curd forms a uniformly melted product, and packaging and cooling the melted product from the processed cheese cooker. Augers in the processed cheese cooker preferably have a closed auger flighting. The curd preferably has a moisture content of from about 43% to about 45%, a salt content of from about 1.2% to about 1.5%, a fat content (dry basis) of from about 38% to about 42%, and a pH of from about 5.1 to about 5.3.

IN THE CLAIMS:

Please ~~cancel~~ claim 3 without prejudice.

Please ~~amend~~ claim 1 as follows:

25
1. (Amended) A method of making a pasta filata cheese comprising:
blending a typical pasta filata-type cheese curd,
processing the blended curd in a processed cheese cooker by injecting only direct
steam into the blended curd just until the blended curd forms a uniformly melted product,
and
packaging and cooling the melted product from the processed cheese cooker.

ab
Please ~~amend~~ claim 5 as follows:

5. (Amended) A method of making a pasta filata cheese comprising:
blending a typical pasta filata-type cheese curd,
injecting only direct steam into the blended curd just until the blended curd forms
a uniformly melted product, and
packaging and cooling the melted product.

at
Please ~~amend~~ claim 10 as follows:

10. (Amended) A method of making a cheese comprising:
blending a curd having a moisture content of from about 38% to about 48%, a salt
content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to
about 48% and a pH of from about 5.0 to about 5.4,
injecting only direct steam into the blended curd just until the blended curd forms
a uniformly melted product, and
packaging and cooling the melted product.

Please amend claim 12 as follows:

18 12. (Amended) A method according to claim 9, wherein injecting only direct steam into the blended curd produces cheese internal temperatures ranging from about 140 to about 180 ° F.

2 Please amend claim 13 as follows:

13. (Amended) A method according to claim 9, wherein injecting only direct steam into the blended curd is accompanied by a minimum auger speed to assure even mixing and melting of the blended curd without lowering fat and moisture content to below that desired for the cheese.

Please amend claim 15 as follows:

19 15. (Amended) A method of making a cheese comprising:

blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4,

processing the blended curd in a processed cheese cooker by injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product, and

packaging and cooling the melted product from the processed cheese cooker.

Please add the following new claims:

20 19. A method of making a pasta filata cheese comprising:

blending a typical pasta filata-type cheese curd,

injecting steam into the blended curd just until the blended curd forms a uniformly melted product, and

packaging and cooling the melted product;

wherein various ingredients are added before injecting steam into the blended curd to optimize quality of the pasta filata cheese, the ingredients selected from non-fat dry milk, anhydrous milk fat, milk protein concentrate, concentrated milk fat, dry cream, emulsifier, water, salt and mixtures thereof.

20. A method of making a cheese comprising:
blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4,
injecting steam into the blended curd just until the blended curd forms a uniformly melted product, and
packaging and cooling the melted product;
wherein injecting steam into the blended curd is accompanied by a minimum auger speed to assure even mixing and melting of the blended curd without lowering fat and moisture content to below that desired for the cheese.

REMARKS

I. Amendments to the Specification and Claims

Minimal changes have been made to the specification to correct minor obvious typographical errors. No new matter has been introduced. 35 U.S.C. 112. 37 C.F.R. 1.132.

Claims 8 and 12 have been indicated to be allowable if rewritten in independent form. Newly presented claims 19 and 20 are presented as rewritten from claims 8 and 12, respectively. However, please note that the allowability of original claims 8 and 12 is argued in response to the Examiner's rejections below.

II. Rejections Based on Cited References

A. Rejection of Claims 1 and 3 – 6 under 35 U.S.C. 103(a) over Kielsmeier (3,961,077) in view of Miller (5,709,900).

The Examiner takes the position that Kielsmeier discloses making pasta filata cheese by the stored curd process. The Examiner takes the position that the last line of the Kielsmeier abstract discloses blending curd from a plurality of separate batches. The Examiner further takes the position that Kielsmeier's Fig. 1 flow chart shows processing cheese in a cheese cooker. The Examiner then takes the position that the use of a whole milk and skim milk combination during curd formation lowers the fat in the cheese. The Examiner takes the position that Miller shows that packaging cheese products is well known in the art. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to package the Kielsmeier cheese to extend shelf life.

Independent claim 1 has been amended to recite that the blended curd is processed in a processed cheese cooker by injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product. Independent claim 5 has been amended to recite injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product. These amendments are supported in this application as filed, *inter alia*, at page 3, lines 9 – 13:

The inventive method uses **direct steam** for cooking and stretching instead of hot water. It is an advantage of the present process to use a typical processed blender and a typical processed cheese cooker to prepare the pasta filata cheese. However, the method of this invention may use any other method of blending the curd and melting the curd using **direct steam**.

at page 4, lines 12 – 14:

The processed cheese cooker melts the blended curd by **injecting steam into the blended curd** just until the blended curd forms a uniformly melted product.

at page 4, lines 21 – 23:

To optimize quality of the pasta filata cheese, various ingredients may be added before **injecting steam into the blended curd**.

at page 4, lines 16 – 26:

A novel method of making a cheese comprises blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4, **injecting steam into the blended curd just until the blended curd forms a uniformly melted product**, and packaging and cooling the melted product. ... **Injecting steam into the blended curd** produces internal cheese temperatures ranging from about 140 to about 180 ° F. **Injecting steam into the blended curd** is accompanied by a minimum auger speed to assure even mixing and melting of the blended curd without lowering fat and moisture content to below that desired for the cheese.

at page 8, lines 9 – 10:

If desired, a suitable emulsifier may be added to **the curd** before it is **direct steam melted** in the processed cooker.

at page 9, lines 9 – 16:

In the preparation of traditional pasta filata, such as mozzarella, the pasta filata curd melts in a cooker using hot water. The inventive method uses **direct steam to melt the curd**. Processed cheese cookers use **direct steam to melt the curd** and the present method can use processed cheese cookers to melt the curd. The use of **direct steam to melt the curd** has several advantages over traditional preparations of mozzarella cheese. Solids loss is avoided or minimized with the inventive method using **direct steam**. In the traditional mozzarella preparation, fats and other milk solids are lost in the water used to melt the curd. This loss can amount to from about 0.5% to about 2%.

and at page 9, lines 22 – 26:

Mozzarella produced in the traditional process is cooked in water that reaches temperatures of from about 145 to about 180 ° F. The cheese itself attains internal temperatures ranging from about 125 ° to about 140 F. The inventive method **using direct steam melting** produces cheese internal temperatures ranging from about 140 to about 180 ° F. An added advantage of higher temperatures in the inventive process is that the shelf life of the final cheese is increased. Only the lowest auger speed is needed to assure even mixing and melting of the curd without lowering the fat and moisture content to below that desired for the final mozzarella cheese.

This invention requires the use of only direct steam to melt the cheese curd and teaches, as noted in the specification quotations above, the advantages derived from using

only direct steam and no hot water in the cheese curd melting. Kielsmeier teaches the use of water and steam combined to melt the cheese curd. Figs 1 and 2 of Kielsmeier show processes for pasta filata cheese production. According to the Kielsmeier Fig. 1 flow chart, pasta filata cheese curd is heated in tank 21, which is filled with warm water to which steam may be added:

Warm water is supplied to the tank 21 and also, as required, steam is injected to maintain the desired temperature (col. 8, lines 18 – 20).

According to the Kielsmeier Fig. 2 flow chart, the operation of blender tank 21 is essentially the same as described for Kielsmeier Fig. 1 (col. 10, lines 29 – 43). Kielsmeier, in Example I, may also use warm water alone, without steam, to melt the pasta filata cheese curd (col. 11, lines 51 – 55). Kielsmeier Examples II (col. 12, lines 54 – 55) and III (col. 13, lines 15 – 19) proceed the same as Kielsmeier Example I.

There is no suggestion in Kielsmeier or Miller, taken alone or together, to use only direct steam to melt the pasta filata cheese and especially to anticipate the unexpected advantages reported by the present inventors. It is respectfully noted that the Examiner has pointed to no teaching or suggestion in these references to use only direct steam and achieve the advantages presently reported. These advantages are noted in the specification quotations above and are not taught or suggested by any of the prior references of record. Accordingly, it is respectfully submitted that claims 1 and 3 – 6 define an invention that is unobvious and patentable over Kielsmeier and Miller taken alone or in any combination. Withdrawal of this ground of rejection is in order and is solicited.

B. Claims 1 and 3 – 5 stand rejected under 35 U.S.C. 103(a) as unpatentable over Farkye (5,766,657) in view of Miller.

The Examiner takes the position that Farkye discloses combining several cheese curds to make a cheese with a particular melt value. The Examiner further takes the position that, at Farkye Example 2, lines 62 – 67, two cheese curds are mixed, placed in a

cheese cooker and heated with steam to prepare a blended cheese product. The Examiner takes the position that present claims 1 and 3 – 5 differ from Farkye in packaging the cheese. The Examiner takes the position that Miller shows that packaging cheese products is well known in the art. The Examiner concludes it would have been obvious to one of ordinary skill in the art to package the Farkye cheese to extend shelf life.

Independent claim 1 has been amended to recite that the blended curd is processed in a processed cheese cooker by injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product. Independent claim 5 has been amended to recite injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product. These amendments are supported in this application as filed, at page 3, lines 9 – 13, at page 4, lines 12 – 14, at page 4, lines 21 – 23, at page 4, lines 16 – 26, at page 8, lines 9 – 10, at page 9, lines 9 – 16, and at page 9, lines 22 – 26, all as discussed in the Remarks to the rejection supra.

This invention requires the use of only direct steam to melt the cheese curd and teaches, as noted in the quotations from the specification above, the advantages derived from using only direct steam and no hot water in the cheese curd melting. The only use of steam shown or suggested by Farkye is essentially a *bain Marie* or double boiler. Col. 5, lines 58 – 63 of Farkye teaches:

For example, 95% Curd I and 5% Curd II (38 pounds (17.25 kg) Curd I and 2 pounds (0.91 kg) Curd II), were placed in a jacketed cheese cooker with two rotating screws. Steam was let into the jacket of the cooker and the curd mixture was heated to 60° C. (140° F.) within 5 minutes with shearing.

Col. 6, lines 62 – 67 of Farkye teaches:

For example, 95% Curd I and 5% Curd II (38 pounds (17.25 kg) Curd I and 2 pounds (0.91 kg) Curd II), were placed in a jacketed cheese cooker with two rotating screws. Steam was let into the jacket of the cooker and the curd mixture was heated to 48.9° C. (120° F.) within 5 min with shearing.

There is no suggestion in Farkye or Miller, taken alone or together, to use only direct steam to melt the pasta filata cheese and especially to anticipate the unexpected advantages reported by the present inventors. It is respectfully noted that the Examiner has pointed to no teaching or suggestion in these references to use only direct steam and achieve the advantages presently reported. Accordingly, it is respectfully submitted that claims 1 and 3 – 5 define an invention that is unobvious and patentable over Farkye and Miller taken alone or in any combination. Withdrawal of this ground of rejection is in also order and is solicited.

C. Claims 1, 3 – 5, 10 and 15 stand rejected under 35 U.S.C. 102(b) as being clearly anticipated by Callahan (5,104,675).

The Examiner takes the position that Callahan discloses a processed cheese made from a blend of mozzarella and cheddar cheese (col. 2, lines 56 – 68). The Examiner further takes the position that the Callahan product has a 35% minimum fat content (sic – 36%?? col. 3, lines 25 – 34), a 48% maximum moisture content, and a pH and salt content (col. 3, lines 25 – 34) within that set forth in the composition blend of claims 10 and 15. The Examiner takes the position that the Callahan ingredients are blended, and subjected to steam injection and shear mixing (col. 3, lines 35 – 44). The Examiner also takes the position that the Callahan product is formed, wrapped, and cooled in a single cooling station using cooling wheels.

The Examiner is correct in stating that Callahan prepares “**a processed cheese**,” but Callahan does not prepare a cheese. The present specification describes and the present claims claim a method of making cheese, especially a pasta filata cheese. The Callahan final product cannot be characterized as **cheese**, because it does not meet Food and Drug Administration (“FDA”) requirements for **cheese**, set forth in 21 C.F.R. Part 133, attached hereto for the Examiner’s reference. Only Callahan’s starting material can be correctly characterized as cheese.

The Callahan product does not fall within the FDA definition of cheese or of pasta filata cheese, but rather falls within the definition of "pasteurized process cheese." Note 21 C.F.R. 133.169(d)(7), describing pasteurized process cheese, and compare this with 21 C.F.R. 133.111, 133.155(b), 133.156(b), 133.157, 133.158, and 133.181(b), describing various pasta filata cheeses.

- Pasteurized process cheese is permitted to contain not more than 0.2 % (2000 ppm) of sorbic acid, an additive not permitted in pasta filata cheese. Compare 21 C.F.R. 133.169(d)(7), describing pasteurized process cheese, with 21 CFR 133.111, 133.155(b), 133.156(b), 133.157, 133.158, and 133.181(b), describing various pasta filata cheeses. The Callahan product contains <2000 ppm of sorbic acid (col. 3, lines 25-33).
- Pasteurized process cheese is permitted to contain an emulsifying agent, an additive not permitted in pasta filata. Compare 21 C.F.R. 133.169(c), describing pasteurized process cheese, with 21 CFR 133.111, 133.155(b), 133.156(b), 133.157, 133.158, and 133.181(b), describing various pasta filata cheeses. The Callahan product contains 0.50 % emulsifier solids. (col. 3, lines 25-33).

The Examiner is correct in stating that Callahan starts the process with "a blend of mozzarella and cheddar **cheese**," because Callahan does not begin with a curd starting material, as specifically for by the present claims. Callahan prepares a mozzarella/cheddar product from an already-prepared cheese. The presently disclosed and claimed process starts with a curd. Note that Callahan teaches, at col. 2, lines 22 – 28:

The products may be prepared on a continuous in-line basis by providing a uniform blend of specific types of natural mozzarella and cheddar **cheeses** with very limited amounts of sodium citrate into a pressurized cooking zone maintained at a pressure above atmospheric pressure.

at col. 2, lines 33 – 35:

An important component of the mozzarella/cheddar products of the present invention is a young natural mozzarella **cheese**. By young natural

mozzarella **cheese** as used herein is meant a 14 – 21 day old low moisture part skim mozzarella which is bland in flavor and exhibits a live resilient body. The young mozzarella **cheese** component is necessary to provide the stretch characteristics with a linear knit texture in the finished product.

at col. 2, lines 56 – 65:

After proper **cheese** selection is made, the **cheese** components are ground. The **cheeses** are blended in a ratio of from about 60 to about 75 weight percent and preferably from about 65 to about 70 weight percent **natural mozzarella cheese** to from about 25 to about 40 weight percent and preferably from about 30 to about 35 weight percent **natural cheddar cheese**. Using levels of **natural young mozzarella cheese** higher than 75 weight percent results in a very stiff product which is difficult to pump.

It is important to note that Callahan starts with natural cheese and prepares a product that may no longer be characterized as natural cheese. The present invention discloses a novel process that starts with natural cheese curd and prepares a natural cheese.

Accordingly, it is respectfully submitted that claims 1, 3 – 5, 10 and 15 define an invention that is clearly unanticipated and patentable over Callahan. Withdrawal of this ground of rejection is in order and is respectfully solicited.

D. Claims 2, 7, 9, 13, 15, and 16 – 18 stand rejected under 35 U.S.C. 103(a) as unpatentable over Callahan (5,104,675).

The Examiner takes the position that Callahan discloses a processed mozzarella/cheddar cheese product and a method of making it (col. 2, lines 56 – 68). The Examiner further takes the position that the Callahan product has a 35% minimum fat content, a 48% maximum moisture content, and a pH and salt content (col. 3, lines 25 – 34) said to be within the composition blend of present claims 10 and 15 (sic – claim 10 was not included in this rejection). The Examiner takes the position that the Callahan ingredients are blended, and subjected to steam injection and shear mixing (col. 3, lines 35 – 44). The Examiner also takes the position that the Callahan product is formed,

wrapped and cooled in a single cooling station using cooling wheels. The Examiner further takes the position that claims 2, 7, 9, 13, 15, and 16 – 18 appear to differ from Callahan in the suggestion that the present claims are directed to blast cooling. The Examiner concludes that, given the flash or rapid cooling expected for a cheese slice on a wrapping wheel, this particular feature is not seen to lend any unobvious or unexpected results. The Examiner also concludes that the mixing speed and the closed auger flighting are seen to be within the determination of one of ordinary skill in the art to obtain a well-blended product, having the mixing guidance of Callahan. The Examiner concludes that the lower salt content of claim 17 would have been obvious to one of ordinary skill in the art to prepare low sodium cheese.

As carefully explained in Remarks responsive to the rejection immediately *supra*, repeated here as equally pertinent, Callahan starts with cheese and results in a processed cheese. The present process starts with a curd and results in a pasta filata cheese. Accordingly, it is respectfully submitted that claims 2, 7, 9, 13, 15, and 16 – 18 define an invention that is clearly unobvious and patentable over Callahan. Withdrawal of this ground of rejection is in order and is solicited.

E. Claim 11 stands rejected under 35 U.S.C. 103(a) as unpatentable over Callahan (5,104,675), as applied to claims 1 – 5, 7, 9, 10 and 13 – 18 above, further in view of Kielsmeier (3,961,077).

The Examiner takes the position that present claim 11 appears to differ from Callahan in the addition of a thermophilic culture. The Examiner further takes the position that Kielsmeier teaches that thermophilic cultures are known in pasta filata cheese manufacture. The Examiner concludes that is supposedly would have been obvious to one of ordinary skill in the art to use the Kielsmeier culture in the Callahan cheese to provide a cheese with a typical pasta filata cheese flavor.

As carefully explained in the Remarks responsive to the rejection *supra* over Callahan under 35 U.S.C. 102(b), repeated here as equally pertinent, Callahan starts with

cheese and results in a processed cheese. The present process starts with curd and results in a pasta filata cheese. The discussion of Kielsmeier *supra* is repeated here as equally pertinent. It is submitted that Kielsmeier adds nothing to support the rejection of the present claims over Callahan. It is respectfully submitted that claims 1 – 5, 7, 9, 10 and 13 – 18 define an invention that is clearly unobvious and patentable over Callahan and Kielsmeier, taken alone or in any combination. Withdrawal of this ground of rejection is in order and is solicited.

III. Claims indicated allowable

Claims 8 and 12 have been indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 8 and 12 have been rewritten as new claims 16 and 17, respectively. Allowance of these claims is solicited.

IV. Conclusion

It is respectfully submitted that with the present amendments to the claims and in light of the above arguments, all of the presently pending claims are allowable. Prompt issuance of a Notice of Allowance is in order and is solicited. Should the Examiner consider that any minor matters remain to be settled before issuance of a formal Notice of Allowance, the Examiner is requested to telephone the undersigned representative to achieve prompt resolution thereof.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

Troy Gascoigne, Brent Jewett,
and Roger Ochsner

Dated: August 21, 2001

By: 

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Reg. No. 27,065

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Version with markings to show changes made

In the specification:

Paragraph beginning at line 12 of page 1 has been amended as follows:

Natural cheese is conventionally prepared from a milk product, such as whole milk 10, skim milk 12, nonfat dry milk, cream 14 or combinations thereof as illustrated in the Figure 1 Natural Cheese Flow. The milk product is pasteurized 16, acidified, usually with lactic acid, and a bacterial culture 18 is added to the cheese vats 20. Adding a milk-coagulating enzyme coagulates the acidified milk. The coagulum, referred to as curd, is blended to a particulate and heated to separate whey from the curd. After separation of whey, as in matting machines 22, the curd is salted 24, conducted to the cheese towers 26 and formed into solid blocks of cheese 28. The cheese cures in temperature-controlled conditions 30 to achieve the desired texture and flavor.

Paragraph beginning at line 3 of page 3 has been amended as follows:

The inventive method differs from traditional methods of making pasta filata in that much of the standardization of the fat-level takes place in the curd blenders. The inventive method uses either fresh or aged curd. The inventive method may add emulsifiers and other traditional cheese-making ingredients, if desired. An advantage of the inventive method that either minimal or no emulsifier need be added to the processed cheese cooker and that no other ingredients need be added to the processed cheese cooker. The inventive method uses direct steam for cooking and stretching, instead of hot water. It is an advantage of the present process to use a typical processed blender and a typical processed cheese cooker to prepare the pasta filata cheese. However, the method of this invention may use any other method of blending the curd and melting the curd using direct steam. The present invention blends and melts the curd just until forming an evenly melted product with none of the typical pasta filata individual strands. The present method molds the cheese by pumping or extruding the melted curd from the

processed cheese cooker and filling various size packages. The filled packages cool in a blast cooler with sufficient air circulation. Salt can be added to the cheese either in the blender or in the processed cheese cooker, instead of using the traditional brine cooling and salting method. The inventive process may also use traditional molding and brining of the cheese, if desired, but eliminating brine cooling achieves distinct cost savings, as will be more fully explained further herein.

Paragraph beginning at line 16 of page 4 has been amended as follows:

A method of making a pasta filata cheese comprises blending a typical pasta filata-type cheese curd, injecting steam into the blended curd just until the blended curd forms a uniformly melted product, and packaging and cooling the melted product. Lowering the fat content of milk used in making the curd may reduce the fat content of the pasta filata cheese. The salt level of the pasta filata cheese may be determined by adjusting the salt content of the curd before injecting steam into the blended curd. To optimize quality of the pasta filata cheese, various ingredients may be added before injecting steam into the blended curd. These ingredients may be non-fat dry milk, anhydrous milk fat, milk protein concentrate, concentrated milk fat, dry cream, emulsifier, water, salt, or other [ingredient] ingredients allowed by current or future standards, and mixtures thereof.

Paragraph beginning at line 6 of page 5 has been amended as follows:

A novel method of making a cheese comprises blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4, processing the blended curd in a processed cheese cooker just until the blended curd [formed] forms a uniformly melted product, and packaging and cooling the melted product from the processed cheese cooker. Augers in the processed cheese cooker preferably have a closed auger flighting. The curd preferably has a moisture content of from about 43% to about 45%, a salt content of from about 1.2% to about 1.5%, a fat

content (dry basis) of from about 38% to about 42%, and a pH of from about 5.1 to about 5.3.

In the claims:

Claim 3 has been canceled without prejudice.

Claim 1 has been amended as follows:

1. (Amended) A method of making a pasta filata cheese comprising:
blending a typical pasta filata-type cheese curd,
processing the blended curd in a processed cheese cooker by injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product,
and
packaging and cooling the melted product from the processed cheese cooker.

Claim 5 has been amended as follows:

5. (Amended) A method of making a pasta filata cheese comprising:
blending a typical pasta filata-type cheese curd,
injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product, and
packaging and cooling the melted product.

Claim 10 has been amended as follows:

10. (Amended) A method of making a cheese comprising:
blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about [0.8] 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4,
injecting only direct steam into the blended curd just until the blended curd forms a uniformly melted product, and

packaging and cooling the melted product.

Claim 12 has been amended as follows:

12. (Amended) A method according to claim 9, wherein injecting only direct steam into the blended curd produces cheese internal temperatures ranging from about 140 to about 180 ° F.

Claim 13 has been amended as follows:

13. (Amended) A method according to claim 9, wherein injecting only direct steam into the blended curd is accompanied by a minimum auger speed to assure even mixing and melting of the blended curd without lowering fat and moisture content to below that desired for the cheese.

Claim 15 has been amended as follows:

15. (Amended) A method of making a cheese comprising:

blending a curd having a moisture content of from about 38% to about 48%, a salt content of from about [.8] 0.8% to about 2%, a fat content (dry basis) of from about 38% to about 48% and a pH of from about 5.0 to about 5.4,

processing the blended curd in a processed cheese cooker by injecting only direct steam into the blended curd just until the blended curd [formed] forms a uniformly melted product, and

packaging and cooling the melted product from the processed cheese cooker.



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August 21, 2001

Honorable Commissioner of Patents and Trademarks
United States Patent and Trademark Office
Washington, D.C. 20231

In re application of: Gascoigne, et al.
Serial No.: 09/519,824
Filed: March 6, 2000
For: Method of Making Pasta Filata Cheese

GAU: 1761
Our File No.: 116210-77865
Examiner: Carolyn Paden

TRANSMITTAL LETTER

Dear Sir:

Enclosed for filing with the United States Patent and Trademark Office, please find the following documents for the above identified application:

1. Applicant's Amendment in response to the Office Action issued May 21, 2001;
2. Various pertinent federal regulations of the Food and Drug Administration, from 21 C.F.R. Part 133;
3. Return postcard itemizing the above items.

Authorization is given to charge our docket account # 500937 for any fees incurred with this filing.

Very truly yours,

Cecilia M. Jaisle
Patent Agent, Reg. No. 28,824

Enclosures

Certificate under 37 C.F.R. 1.10 of Mailing by "Express Mail"

"Express Mail No. EL 732663226US" Date of Deposit August 21, 2001. I hereby certify that the following identified correspondence is being deposited with the United States Postal Service "Express Mail" service under C.F.R. 1.10 on the date indicated above and is addressed to Assistant Commissioner for Patents, Washington, D.C. 20231, including Transmittal Letter, with certificate under CFR 1.10 of Mailing by "Express Mail", Amendment in response to Office Action dated May 21, 2001; various federal regulations of the FDA, from 21 CFR Part 133; and confirmation postage paid postcard.

Elizabeth M. Doherty

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